

Amendments to the Claims:


This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 and 2. (Canceled)

Claim 3. (Currently Amended) The process according to Claim ~~1 or 2~~ 10, wherein the chromium VI oxide ~~or the other oxides capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycles are~~ is used in a mixture with other metal oxides, capable of undergoing redox cycles, in such proportions as to maintain the formation reaction of synthesis gas globally exothermic.

Claims 4 to 6. (Canceled)

Claim 7. (Currently Amended)  ~~A The continuous process for the production of synthesis gas by the autothermal reforming of light hydrocarbons,~~ according to Claim ~~5 or 6~~ 11, which comprises:

(a) feeding the light hydrocarbon ~~stream~~ in a gas phase to a first fluid bed partial oxidation reactor, containing a solid, comprising CrO_3 :

(b) discharging a gas stream essentially consisting of H_2 , CO and, optionally, the non-reacted hydrocarbon phase, from the head of the first reactor;

(c) collecting ~~at the bottom of the first reactor~~ a solid containing chromium III oxide from the bottom of the first reactor and feeding ~~this~~ the collected solid to a second fluid bed regeneration reactor maintained at a temperature substantially equal to or lower than ~~that present~~ the temperature in the oxidation reactor;

(d) feeding ~~to the bottom of the second regenerator reactor~~ a stream of air at high temperature to the bottom of the second regenerator reactor; and

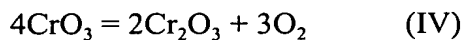
(e) recycling the regenerated solid to the first oxidation reactor.

Claim 8. (Original) The process according to Claim 7, wherein in the first fluid bed oxidation reactor a temperature ranging from 800 to 1100° C is maintained, together with a pressure ranging from 0.5 to 5 MPa.

Claim 9. (Currently Amended) The process according to Claim 7 ~~or~~ 8, wherein in the second regeneration reactor the same operating conditions present in the first reactor are substantially maintained.

Claim 10. (New) A process for the production of synthesis gas, which comprises:
partially oxidizing or autothermally reforming a light hydrocarbon gas with a hexavalent chromium oxide catalyst, supported on an inert carrier and modified with an alkali or alkaline earth metal, as the light hydrocarbon contacts the catalyst and extracts oxygen therefrom thereby being partially reduced and the chromium oxide catalyst being capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycles.

Claim 11. (New) The process according to Claim 10, wherein in the oxidation reaction in an oxidation reactor the hexavalent chromium oxide catalyst is reduced according to the equation:




and wherein the Cr_2O_3 produced by the oxidation of the light hydrocarbon is re-oxidized to CrO_3 by means of air in a reactor maintained at a temperature which is substantially equal to or lower than the temperature in the oxidation reactor.

Claim 12. (New) The process according to Claim 10, wherein the light hydrocarbon is methane ethane, liquified petroleum gas, refinery gas or a naphtha.

Claim 13. (New) The process according to Claim 12, wherein the light hydrocarbon is methane.

Claim 14. (New) The process according to Claim 10, wherein the inert carrier of the catalyst is microspheroidal alumina modified by the addition of silica thereto.

 Claim 15. (New) The process according to Claim 14, wherein the microspheroidal alumina has a particle size of 40 to 100 microns and from 0.1 to 10 % by wt of silica is added thereto.

Claim 16. (New) The process according to Claim 10, wherein the alkali metal is potassium.

Claim 17. (New) The process according to Claim 3, wherein the other metal oxide mixed with the hexavalent chromium oxide is an oxide of copper, manganese, vanadium, cerium, titanium, iron, cobalt, praseodymium, bismuth, zinc, antimony or molybdenum.

Claim 18. (New) The process according to Claim 15, wherein the content of chromium trioxide in the catalyst ranges from 1 to 30 wt % and the content of potassium oxide in the catalyst ranges from 1 to 10 wt %, each with respect to the total weight of the catalyst.
